



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/618,550	07/17/2000	Tetsuo Taniguchi	194378US2CONT	9489

22850 7590 03/21/2002

OBLON SPIVAK MCCLELLAND MAIER & NEUSTADT PC
FOURTH FLOOR
1755 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22202

EXAMINER

NGUYEN, HUNG

ART UNIT	PAPER NUMBER
----------	--------------

2851

DATE MAILED: 03/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/618,550

Applicant(s)

TANIGUCHI

Examiner

Henry Hung V Nguyen

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 26-42 and 49-51 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 and 43-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of group I (claims 1-25, 43-48) in Paper No. 5 is acknowledged. The traversal is on the ground(s) that "PTO has not carried forward its burden of proof to establish distinctness and the search and examination of the entire application would not place a serious burden on the examiner. This is not found persuasive because as clearly indicated in the previous office action, the present application contains multiple inventions which are restrictable. For instance, the invention I is drawn explicitly to an exposure method for forming a pattern onto a substrate having a plurality of layers by using a plurality of exposure devices whereas the invention IV (for example) is related explicitly to an exposure apparatus for correcting the image forming characteristics of the projection optical system. As such, the distinct and separate searches are quite extensive and place a serious burden on the examiner in regard to both search and examination.

The requirement is still deemed proper and is therefore made FINAL.

2. This application contains claims 26-42, 49-50 drawn to an invention nonelected with traverse in Paper No. 5. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show "main controller 100₁"; "main controller 100₂" (see page 50-53 for example) as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed

Art Unit: 2851

invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, “means” to transfer the substrate from the first exposure apparatus to the second exposure apparatus (as indirectly claimed) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-25, 43-48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The claimed language in claims 1, 6, 7, 10, 12, and 15 is ambiguous and not clearly understood. For instance, as per claims 1, 7, 10 (for example), it is not clear how the image forming characteristic of the first exposure apparatus can be adjusted “in accordance with *information on an image distortion correction capability of the second exposure apparatus*” as claimed. How can the first exposure apparatus know information about “the image distortion

Art Unit: 2851

correction capability of the second exposure apparatus". Also, the recitation of "exposing another layer by using said second exposure apparatus" is indefinite and confusing because it is unclear whether or not "the second exposure apparatus exposes another layer on the same substrate". In other words, it is unclear whether or not the a same substrate are exposed by both first exposure apparatus and the second exposure apparatus? What is the meaning of "an image distortion correction capability"? Please explain?

b. As to claims 6 and 15, the meaning of "adjusting an image forming characteristic of said second exposure apparatus, in consideration....by said first exposure apparatus" is vague and not clearly understood. The recitation of "an image distortion which is difficult or impossible to be corrected by said first exposure apparatus" (for example in claim 6) is not a positive limitation and renders the claim indefinite. It can not be determined the metes and bounds of the claim.

7. As to claim 12, the recitation of "adjusting an image forming characteristic of said first exposure apparatus as to leave an image distortion, which said second exposure apparatus can correct" is vague and not clearly understood. Furthermore, how "transferring a pattern of a first mask onto a substrate using a first exposure apparatus, and of further transferring a pattern of a second mask onto said substrate using a second exposure apparatus" as claimed. There is no "means" to transfer the substrate from the first exposure apparatus to the second exposure apparatus and thus claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the

Art Unit: 2851

elements. See MPEP § 2172.01. The omitted elements are: means for transferring substrate from first exposure apparatus to second exposure apparatus.

d. As to claims 9, 13, 14, and 20, the functional recitation such as “so as to reduce an image distortion including a rectangular component” (see claim 9) or “leave at least one of image distortion components of a trapezoidal component” (see claim 14) are indefinite since the claims have no sufficient structures to warrant the presence of the functional language.

e. In addition, the breath, scope and meaning of the terms “finely corrects”, or “roughly corrects” (see claim 22 for example) renders the claims indefinite. That is, when a term of degree is used as a limitation, it is necessary to determine whether the specification provides some standard for measuring that degree. In this case, the specification does not enable one skilled in the art to reasonably establish what may be construed as being within the metes and bounds of the term of degree. Therefore, one of ordinary skill in the art would not be apprised as to the claimed invention’s scope when the claims are read in light of the specification.

f. The recitation of “wherein said second....before exposure of said one layer by said one apparatus...after exposure of said one layer by said one apparatus” in dependent claim 27 seems to be conflicted with independent claim 26 and thus it is not clearly understood.

8. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

For the purpose of expediting prosecution of the present invention, the rejected claims are being interpreted in light of the specification under the following art rejections.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. As best the claimed subject matters are understood (see rejection under 35 U.S.C. 112, second paragraph, *supra*). Claims are anticipated by references.

11. Claims 1-25 and 43-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umatate et al (U.S. Pat. 5,243,377) in view of Nara et al (U.S. Pat. 5,617,211).

With regard to claims 1-4, 6-7, 9-12, 15-18, 43-48, Umatate et al (fig.1) discloses a lithography system/method comprising a plurality of exposure apparatus (EXP1 to EXPn) each of which is different from one another and is used to form patterns of a plurality of layers onto a substrate; a system observer apparatus and a host computer (H-com) which can correct a part of working parameters and various information set in each of the exposure apparatus and controls the whole lithographic system and select the optimum exposure apparatus to be used in accordance with the measured parameters information of each exposure apparatus and inform the optimum instruction for correcting the parameters of the exposure apparatuses. (see abstract, and column 5 line 1 to col.7, lines 40). Thus, Umatate et al substantially discloses all limitations of the instant claims. Umatate et al does not expressly disclose “*the imaging characteristics* (magnification and focus) of first exposure apparatus being adjusted to expose one layer in consideration of image distortion correction capability of a second exposure apparatus”.

However, measuring the image distortion of an exposure apparatus and adjusting the image

Art Unit: 2851

distortion of the exposure apparatus based on the measured results is well known per se. For instance, Nara et al teaches “the imaging characteristics of the plurality of projection optical systems being corrected in accordance with the measured parameters” (see abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Umatate et al and Nara to obtain the invention as specified in claims of the present invention. It would have been obvious to a skilled artisan to adjust the imaging characteristic of the exposure apparatus in accordance with detected image distortion information as taught by Nara into the exposure system of Umatate for the purpose of improving the quality of the images to be printed.

With respect to claims 5, 8, 13-14, 19-25, Umatate et al does not expressly disclose the type of first exposure apparatus being “stationary type exposure apparatus and scanning type exposure apparatus and the type of second exposure apparatus being the other stationary type exposure apparatus and scanning type exposure apparatus”. Since these two types of exposure apparatus and their characteristics are well known per se and applicant has not disclosed that in this case, selecting type of exposure apparatus for first exposure apparatus and second exposure apparatus is for any particular purpose, it is the examiner’s position that it would have been obvious to a skilled artisan to select one of these two types of exposure apparatus for the first and second exposure apparatus as claimed for transferring a pattern formed on a mask onto a substrate.

Art Unit: 2851

Prior Art Made of Record

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Higashi (U.S.Pat. 6,262,792) and Kaise et al (U.S.Pat. 6,296,977) discloses exposure apparatus for correcting the imaging distortion of the projection optical system.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Henry Hung V Nguyen whose telephone number is 703-305-6462. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

hvn
March 14, 2002


RUSSELL ADAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800